Emergency Medical Services Chiefs of Canada (EMSCC)
Directeurs des services médicaux d'urgence du Canada (DSMUC)

Ms. Joy Smith, MP Kildonan - St Paul
Chair, Standing Committee on Health

January 4, 2012

Re: Chronic Diseases Related to Ageing and Community Paramedicine

Dear Chair Smith and Members of the Standing Committee on Health:

Thank you for the opportunity to present as a Witness to the Standing Committee on Health on November 28, 2011. It was my pleasure to engage in a presentation and subsequent discussion on "Chronic Diseases Related to Ageing" and the positive role Emergency Medical Services can contribute in addressing the emerging issues.

Based on the discussion, I was asked by the Committee to provide further information on Community Paramedicine and the associated innovative programs that can improve the access and delivery of health care to seniors. Further, I indicated that Emergency Medical Services Chiefs of Canada (EMSCC) would provide further information on cost savings to the health care system via Community Paramedicine programs.

Attached to this letter is a document prepared by the EMSCC that defines Community Paramedicine and provides examples of related innovative programs across Canada and the world. As evident in the examples, Community Paramedicine provides Canadians greater access to health care (in remote, rural and urban centres) in a service delivery model that provides substantial savings to the health care system.

Not only does Community Paramedicine address chronic diseases related to an ageing population, it also addresses improving access to the health care system by seniors, Canadians living in remote and rural locations, and other vulnerable members of the community.

Thank you for this opportunity to provide further information. As President of the EMSCC, I look forward to continuing this discussion.

Sincerely,

Michael Nolan
President, EMSCC

Community Paramedicine

Submission to the Standing Committee on Health
December 2011

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Emergency Medical Services Chiefs of Canada (EMSCC)
Directeurs des services médicaux d'urgence du Canada (DSMUC)

Organized in 2002, the EMSCC/DSMUC is a Canada-wide organization representing the Leaders of EMS programs in Canada. Together, EMS Chiefs oversee approximately 30,000+ Paramedics from coast to coast, which represents the third largest health care provider group in Canada. (For more information on the EMSCC, please visit **www.emscc.ca**).

As recommended in the EMSCC White Paper entitled ***The Future of EMS in Canada***, "EMS must pursue innovation and new models of service delivery to meet the community-defined needs. Collaboration of EMS and community organizations, social service agencies, and public safety groups will enable innovative initiatives that have the potential to improve the level of health care within a community."

EMSCC is working collaboratively with their international partners on Community Paramedicine. The work is organized via the ***International Roundtable on Community Paramedicine*** and thereby allows a dedicated forum where various countries and regions can exchange information and innovative programs that is focused on exploring the promotion and better delivery of health care through the utilization of "traditional" and "non-traditional" models of care. (For more information on the International Roundtable on Community Paramedicine, please visit **www.ircp.info**).

The purpose of this paper is to provide further information to the Standing Committee of Health relative to Community Paramedicine. This information is based on the current experiences in Canada and internationally relative to innovative paramedic practice that will assist Canadians in their current and future health care needs.

Michael Nolan
President
EMSCC

What is Community Paramedicine?

Traditionally, paramedics are trained to respond to emergency 911 calls, treat patients who are ill and injured, and transport the patients to emergency departments. However, not all patients require transport to an emergency department. Many simply need basic assessment and referral to an appropriate community service. This is evident with seniors, residents in rural and remote areas, and vulnerable members of the community.

Representing just 14% of the population, seniors use 40% of hospital services in Canada and account for about 45% of all provincial and territorial government health spending. As reported by the *Canadian Institute for Health Information*, one in four Canadians will be over the age of 65 representing 25% of the population by 2036, thereby placing further pressures on health care costs.[1]

In Canada, 60% of Paramedic responses are for patients over the age of 60, while patients over the age of 80 represent in excess of 27% of all requests for assistance through 911. In a direct correlation, with an ageing population, the paramedic response call volume to seniors requesting health care assistance is increasing.

In an effort to maximize efficiencies in patient care and resources, many paramedic services are finding innovative programs and best practices to address the non-emergent primary care needs of seniors and other vulnerable members of their respective communities. One such innovative program is Community Paramedicine; where paramedics are engaged in non-traditional roles to assist in the health care of the population.

According to the International Roundtable, *Community Paramedicine* is a model of care whereby paramedics apply their training and skills in "non-traditional" community-based environments, often outside the usual emergency response and transportation model). The community paramedic practices within an "expanded scope", which includes the application of specialized skills and protocols beyond the base paramedic training. The community paramedic engages in an "expanded role" working in non-traditional roles using existing skills.

By expanding the role of paramedics, and working collaboratively with other community agencies, paramedics can manage the patient who does not require the immediate need to be treated and transported to an emergency department. Via an expanded paramedic scope of practice, paramedics can manage the patient and refer the patient to the appropriate community agency (such as the patient's family doctor, community care access centre, home care, public health, mental health, addiction services, and/or domestic violence services). At times, it may be as simple as the paramedic assisting the patient to contact a family member or friend to attend their home. By referring the patient to the most appropriate community agency or family/friend, there will be a significant reduction in visits to emergency departments and associated hospitalizations.

The Positive Outcomes of Community Paramedicine

Due to advancements in technology, training delivery, and medical research – the scope of practice can be easily increased. This includes educating paramedics in advanced patient care assessments and skills (such as 12-Lead ECG acquisition and interpretation, blood glucose testing, monitoring oxygen saturation levels, intravenous therapy, phlebotomy, wound care, expanded drug administration, antibiotic therapy, and delivery of vaccinations). An expanded scope of practice in paramedics leads to the ability to initiate a Community Paramedicine program.

Technology:
- Many paramedic services have implemented the infrastructure to capture and distribute health information via electronic reporting. This e-Health information can then be shared with other healthcare and social organizations in the continuum of patient care.
- Significant advancements have been made in mobile diagnostic equipment (such as cardiac monitoring, ultrasound, oximeters, and glucometers) thereby enabling paramedics to conduct mobile clinical assessments.
- Advancements in communication technology (video, voice and data) has created the ability for paramedics to consult 24/7 with off-site medical practitioners.

Community Paramedicine will assist in alleviating the increasing pressure on our health care system. Overall, as evident with many innovative programs across Canada and globally, Community Paramedicine will achieve significant savings in health care by:

Reducing the volume of 911 calls

- By entering designated communities - such as in Saskatoon with the innovative Health Bus - patients can access medical advice and care rather then calling 911 for assistance. This will directly reduce the 911 call volume, take pressure of the 911 system, and allow 911 call takers to manage other priority emergency calls.
- A reduction in 911 calls also reduces the need of Tiered Responses by allied emergency services (police, fire and EMS). This decrease in tiered response allows allied emergency services to focus on other priority calls, and, increases community safety by reducing emergency vehicles needlessly traveling rapidly through neighbourhoods with lights and sirens.

Reducing emergency department visits

- With paramedics referring patients to appropriate community agencies, there is a decrease in need of transporting these patients to local emergency departments.
- Reducing emergency department visits will lessen the burden of overwhelmed hospitals and the associated wait times for patients to see an emergency physician.
- Reducing the visits to emergency departments will also assist in decreasing ambulance off-load delays (where patients cannot be transferred from paramedics to emergency department staff because there are no emergency beds available). During off-load delays, paramedics are confined with their patients at the hospital waiting for an emergency bed, rather than be available for other 911 emergency calls in the community. This has been negatively affecting EMS system performance globally.

Reducing hospitalizations

- By the early detection of medical problems with seniors and other vulnerable members of the community, medical conditions can be prevented from advancing

into further complex cases and/or emergencies. With early detection, and associated health promotion, the wellness of a community's population is increased.
- With the reduction in hospitalization via early detection and health promotion, there is an improvement in hospital capacity and alternate level of care availability.

Reducing the demand on long-term care beds

- By providing seniors with the ability to stay at home longer – supported by family, friends, home care, EMS and other community agencies – there will a decrease in demand on long-term care (LTC) beds.
- From reducing the demand on LTC beds, there is associated reduction in seniors held idle at hospitals due to the lack of LTC vacancy. This translates to a reduction in the congestion of patients at the emergency departments awaiting beds in the other hospital wards.

Reducing mortality and morbidity

- Community Paramedicine, associated with other community programs focused on the early detection and health promotion of seniors, there is prevention in the untreated chronic diseases of seniors. This will lead to a reduction in patient mortality and morbidity.

Filling in the health care gaps

- Many communities in rural and remote areas of Canada are experiencing the shortage of doctors and nurses in order to meet their health care needs. An alternative model is enabling paramedics to provide health and education services, when not engaged in emergency services.

Examples of Community Paramedicine in Canada and the World

In Canada, there are many innovative Community Paramedicine programs that have been implemented with significant success.

In **Nova Scotia**, access to health care can be quite challenging on the islands of Long and Brier where recruitment of a doctor was not possible. This prompted the Emergency Health Services (EHS) Nova Scotia to establish 24/7 emergency paramedic coverage on the islands. When not engaged in emergency calls, the paramedics work collaboratively with a nurse practitioner and an off-site physician in providing non-emergent health care by administering flu shots, holding clinics, and checking blood pressures. In addition, paramedics began to take phone calls from the community residents for non-emergent services such as diabetic assessments, wound care, drawing blood for subsequent lab tests, congestive heart failure assessment, administration of antibiotics, urinalysis assessment, suture/staple removal, identifying medication compliance, and providing education sessions (such as fall prevention, CPR and first aid, proper child seat installation, and bicycle helmet safety).

Reduction in Doctor visits by 28% and a decrease in trips to the Emergency Department visits by 40%.

Overall, as the program was communicated to the residents on the islands, patient contact climbed to 250-300 per month.[2] This innovative model of care resulted in decreased costs, increased access to health services, a high level of acceptance and satisfaction within the community, and effective collaboration amongst health and social care providers. Visits to the doctor on mainland Nova Scotia decreased by 28%, and trips to a hospital emergency department fell by 40% over a five year period. According to researchers, direct annual health care cost diminished from $2380 to $1375 per person over the three years of the study.[3]

In **Ontario**, Toronto EMS commenced their successful Community Paramedicine referral program in 2006. The program was initiated to address the growing number of paramedic responses (over 60,000 non-emergency calls per annum) where many of the patients did not require transport to emergency departments, but required simple primary care or access to other community services. Toronto EMS discovered that specific demographics of their community were calling 911 because they were unaware how to access other health and social services.

In February 2010, there was a 73.8% reduction in EMS Calls.

When paramedics respond to a 911 call, they are often in the unique position of witnessing some of the more intimate and private circumstances of the patients living conditions. Difficulties with the management of medical conditions, mobility, or performing activities of daily living are just a few of issues that may not be apparent to family, friends, healthcare providers, or social assistance. Patients can live with these issues for extended periods of time without receiving any assistance. Often EMS is the first health care provider to identify a need for services to help these patients.

Toronto's Community Referrals by EMS (CREMS) allows the paramedic to make a referral to the Community Care Access Centre (CCAC) on behalf of the patient with their consent. Some patients are not aware of the services that CCAC provides. Others do not recognize that they themselves are in need or could benefit from CCAC assistance. For many patients, having a paramedic offer them a CCAC referral is the first step to connecting them with much needed help.[4]
According to Toronto EMS, a snapshot of February 2010 call volume revealed a 73.8% reduction in calls from individuals who would have previously called 911. This reduction is attributed to 79 CREMS received in the same month.[5]

Travelling further west, in **Saskatchewan**, the provincial government announced the transition of Emergency Medical Services (EMS) to a Mobile Health Services (MHS) system. The new MHS system will continue to provide strong emergency care services while providing opportunities for augmented, high quality patient care.[6]

Services provided on 5,936 visits, where 43% were repeat clients.

Monday	19th Street/Avenue C
Tuesday	Safeway Parking Lot (Avenue D & 33rd St)
Wednesday	(20th Street/Ave M)
Thursday	Shell Service Station (22nd Street/Ave P)
Friday	Giant Tiger (22nd Street/Ave F)
Saturday	Appleby Drive
Sunday	Affinity Credit Union (20th Street/Ave P)

One such augmented patient care program is the Saskatoon Health Bus. This mobile unit is a joint partnership amongst M.D. Ambulance, CUMFI, First Nations agencies, Saskatoon Health Region and the provincial Ministry of Health. The Health Bus was implemented to reduce the barriers faced by people who are geographically, socially, economically, and / or culturally isolated from accessing health care services. Staffed by paramedics and nurse practitioners, the Health Bus is scheduled 7 days a week on a rotating schedule. In an 8 hour day, the staff will provide a number of services and community referrals to various

populations (including seniors, First Nations, Métis, children, immigrants, refugees and those with chronic diseases). Specifically, the Health Bus staff diagnose and treat common illness and injuries, STI testing, pregnancy testing, birth control, provide free condoms, chronic disease monitoring, wound care & management, stitches and removal of stitches. Relative to community referrals, the staff will connect individuals to addiction, social and mental health agencies. According to the province, during 2009-10, approximately 5,936 visits to the Health Bus were recorded, where 43% were repeat clients.

In **Alberta**, there was a systemic transition of EMS from a municipal responsibility (in terms of governance and funding) to the one provincial health authority, Alberta Health Services (AHS). To guide this transition, AHS developed a 5-year strategic plan (2010-2015) entitled *EMS: On the Move.* In the strategic plan, AHS adopted primary focus areas, including the focus of co-locating EMS practitioners at healthcare facilities, as appropriate, enhancing the integration of EMS within health facilities and improving system efficiencies.[7] According to their 2010-2011 key initiatives, AHS has identified a number of key goals that support the notion of the community paramedic:

- Undertake activities to shift the initiation of definitive care to the point of first patient contact with EMS. Priority activities include development and implementation of assess, treat and refer protocols, referral processes and alternative transport destinations; and
- Integrate the EMS service plan with health services across the care continuum with a priority focus on opportunities to positively impact Senior's Health/Home Care, Mental Health, Public/Community Health and emergency departments.

There are many examples cited[8] where AHS key initiatives have been implemented. In specific communities (such as Fort MacLeod, Fort Vermillion, Peace River and High Level) paramedics are working in the Emergency Departments as part of their regular scheduled ambulance duties because of the shortage of doctors. At Rainbow Lake, where there is no available doctor, paramedics either work with a nurse practitioner or alone in order to staff the community's health care clinic. In the urban centres of Calgary and Edmonton, paramedics have been permitted to refer clients needing extra services to Home Care via Community Care Access. And in Medicine Hat, paramedics work in partnership with the Home Care system to deliver in-home IV therapy and medication administration during off hours and weekends.

Overall, the innovative Community Paramedicine programs across Canada have assisted seniors, communities where there is a shortage of doctors and nurses, and marginalized members of the community – in meeting their non-emergent healthcare needs. The programs have also benefited hospitals and emergency resources by diverting away from emergency services towards more appropriate medical clinics, community care centres, and social agencies.

There is a well established Community Paramedicine program in Fort Worth, Tarrant County, **Texas** (population of 1.8 million). The program is a collaborative effort between MedStar Emergency Medical Services (MedStar), the Emergency Physicians Advisory Board (EPAB), John Peter Smith Health System (JPS), Tarrant County Public Health (TCPH) and the Mental Health and Mental Retardation Services of Tarrant County (MHMR). The program was initiated because patients were seeking emergency medical care as they were unable or unwilling to obtain medical care in a more appropriate setting. The program administrators discovered without proper preventive or routine medical services, minor medical conditions may become acute, prompting the need for emergency medical care. Thus, the partnership concluded that the Community Health Program will significantly reduce the overall cost of emergency care and provide a more appropriate use of pre-hospital and in-hospital emergency services.[9]

A $13.5 million reduction in charges and costs over a 2-year period.

The MedStar EMS Community Health Program has indeed generated significant success. In Tarrant County alone, from July 2009 to August 2011, the Community Health Program has decreased EMS call volume by 58.2% achieving a savings of over $3.7 million (patient charges and EMS costs). Over this same period, the program has also reduced emergency bed occupancy by 14,334 hours which can be translated to a cost savings of over $9.8 million. Overall, the program has realized a $13.5 million reduction in costs and charges over a 2-year period.

In the **United Kingdom**, the South Yorkshire Ambulance Service developed the *Paramedic Practitioner Older People's Support* scheme that set out to deliver patient-centred care to seniors calling 911 for an ambulance, but with conditions triaged as not immediately life threatening. Paramedics were trained in extended skills to assess and, when possible, treat older people in the community. Researchers, seeking to evaluate the cost effectiveness of the program, discovered a modest EMS savings of £140 per patient. However, when the Quality Adjusted Life Years (QALY) was considered simultaneously, the community paramedics had a greater than 95% chance of being cost effective at £20,000 per QALY.[10]

Similar challenges of providing health care services in rural and remote areas can be found in **Australia**. A review[11] of ambulance services discovered three service delivery models in addressing these challenges:

- *Primary Health Care Model* –
  Where ambulance services recognized that 25% of patients did not need transportation to hospital and that these patients could be safely assessed and managed or referred without needing to leave the comfort of their own home. Not only was this model implemented in the rural areas of New South Wales, the model was also introduced by Queensland Ambulance Service to meet the needs of seniors and marginalized community members living in urban centres.
- *Substitution Model* –
  Where paramedics are staffed in some South Australian Country hospitals (due to shortages in general practitioners) and in Alice Springs Emergency Department (due to shortages in nursing staff).
- *Community Coordination Model* –
  A focus on recruiting, retaining and supporting existing volunteers whilst providing support to existing health services where required.

As part of their discussion, the Australian reviewers suggest paramedics are well placed health professional that can play a key role in contributing to health outcomes of Australians. In rural and remote areas, paramedics have capacity to contribute positively to the sustainability and social capital of communities due to their medium to low emergency response workloads. It is also suggested that paramedic services, in association with other community services, can apply this expanded scope in urban settings to meet the needs of seniors.

The efforts of paramedic services cannot be done in isolation. Although there is great variety of Community Paramedicine programs, there are two common elements relevant to all programs: (1) meeting a local need for services using paramedics; and (2) engaging multiple stakeholders to ensure a seamless integration of the program into the health care continuum. A comprehensive, collaborative strategic plan will be integral to the successful implementation of a community paramedic program.[12]

The Cost Savings Achieved

In Canada, although the innovative Community Paramedicine programs have been very successful, there has been no formal and systemic quantifiable cost-benefit analysis conducted. However, based on the experiences in the United States and the United Kingdom, financial projections can be estimated.

According to the Ontario Municipal Benchmark Initiatives (OMBI) 2010 Report[13], Toronto EMS operates at $232 per unit hour with weighted in-service of 248 hours per 1,000 people. If Toronto EMS was able to reduce their patient transportation to hospital call volume by 10 % via Community Paramedicine initiatives, then the potential savings to EMS would equate to over $8.4 million per annum. The impact to emergency departments would be an estimated reduction of 109,500 bed hours (based on the MedStar projection of 6 hours per primary care visit). These savings would be reduced by the costs to administer the program, educate the paramedics in an expanded scope of practice, and continuous quality improvement initiatives. Including these off-set costs, the savings to primary health care is in the tens of million of dollars in the Greater Toronto Area. In formulating public policy, one would need to consider the impact of these savings across other urban areas of Canada.

The opportunities are limitless. For example, simply providing Community Paramedicine at an urban adult detoxification centre in Winnipeg produced a 52% reduction in ambulance utilization (when compared to the average in the previous 3 years). The provision of an expanded-scope paramedic at an urban intoxication center resulted in an alternate route for the medical management of the resource-heavy acutely intoxicated patient population.[14] The savings were estimated at approximately $250,000 per annum.

In rural and remote areas of Canada, although the economic impact is not as high as in urban areas, the financial advantages remain. In Nova Scotia, researchers identified a direct annual health care costs reduced from $2380 to $1375 per person (over the three years of the study). Reducing annual health care costs by 42% will allow policy makers the flexibility to reinvest the savings into other community programs.

In rural United States, where rural-dwelling seniors experience unique issues related to accessing medical and social services, researchers discovered that a Community Paramedicine program can facilitate the needed linkages between vulnerable rural-dwelling older adults and needed community-based social and medical services.[15]

EMSCC is striving to work with academic researchers to evaluate current Community Paramedicine programs to further analyze financial impacts to the health care system.

Recommendations

Community Paramedicine benefits populations in both rural and urban settings. As evident in Nova Scotia, Community Paramedicine has filled the service needs where doctor and hospital accessibility is challenged. In Toronto, Community Paramedicine has provided an alternative model of health care accessibility in lieu of exhausting 911 resources. These strategies have also been implemented in the United States, United Kingdom and Australia. Overall, Community Paramedicine can function as the connective tissue that allows seniors and marginalized members of the community access non-emergent primary health care and social services.

Given the information coordinated by EMSCC and their partners, the following recommendations are respectfully submitted to the Standing Committee on Health:

1. Federal government supports the efforts of EMSCC in developing both rural and urban Community Paramedicine programs in association with provincial and territorial regulators, the medical community, and social networks. This includes expanding the scope of paramedic practice to non-traditional roles and thereby improving mobile health services.

2. EMSCC work with senior levels of government to secure funding in developing best practice models of Community Paramedicine. These pilot projects can then be emulated across the nation, thereby allowing Canadians greater access to health care and social assistance.

3. Federal government support EMSCC to work collaboratively with researchers in validating the positive outcomes of Community Paramedicine. This includes quantifying the cost savings achieved by the health care system.

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The rural and regional ambulance paramedic: moving beyond emergency response

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Abstract

Serious long-term recruitment and retention problems among rural health workers in Australia have contributed to inequitable health service access for rural Australians. In response new health care models with flexible workforce roles are emerging, including expanded-scope paramedic roles.

Objective

This research project addressed the need to develop more flexible and integrated services to improve rural Australians' health outcomes with a primary focus on the role of ambulance service personnel.

The principal objective was to identify Australian and international trends in the evolving role of ambulance paramedics and to determine the key characteristics, roles and expected outcomes for an Expanded Scope of Practice (ESP) that are desirable, feasible and acceptable to key stakeholders.

Research design

Multiple case study methodology involving partner investigators and ambulance professionals as research associates. This study of ambulance practice was set in rural Tasmania, New South Wales, South Australia and Victoria innovative models of rural ambulance practice are evolving.

Findings

Paramedics are increasingly becoming first line primary health care providers in many small rural communities as the provision of other health care services contract. Within these emerging ESP models, paramedics are developing professional responsibilities throughout the cycle of care, through:

- more active community involvement and support;
- expansion of their capacity to work in partnership with other health providers in institutional settings or as part of the primary health system; and
- the development of broader scopes of practice for paramedics in response to changes in technology, education and the ongoing shortage of other health professionals.

Conclusions

This research project has reviewed and analysed the emerging roles of paramedics in rural and regional areas. Its outcomes have the potential to set strategic directions for an ESP paramedic role for rural ambulance services in Australia. Expanding ambulance paramedics' scope of practice offers the potential to improve patient care and the general health of the community. The industry partnership approach between ambulance authorities and universities has increased the research capacity of Australian pre-hospital services.

The findings and recommendations are consistent with the general thrust of the recent Productivity Commission report on health workforce issues that emphasised the importance of designing and operating services that are both effective and efficient.

Context

Serious long-term recruitment and retention problems among rural health workers have contributed to inequitable health service access for rural Australians. In response new health care models with flexible workforce roles are emerging, including expanded-scope paramedic roles.[1]

In common with paramedics throughout the developed world, Australian paramedics have the potential to be more closely integrated with other health service providers, and to more effectively utilise periods when they are not responding to emergency calls. Some key factors driving this dialogue on expanded scopes of practice for paramedics are: increasing demand in hospital emergency departments; decreasing home visiting by medical practitioners; and the increasing professionalisation of paramedics.[2–6] While clear that the need exists for some form of better trained paramedic, the form of this emerging role is more uncertain.

Internationally, key organisations are beginning to embrace expanded-scope paramedic roles. The USA *EMS Agenda for the Future* envisions emergency medical services undertaking a community-based health management role that is fully integrated with the overall health system.[6] In the United Kingdom, the Joint Royal Colleges and Ambulance Liaison Committee has set the agenda for expanding the scope of ambulance practice.[7] These new paramedic models incorporate the chain of survival concept, but increase the depth of treatment and clinical decision-making, and include primary care activities.[8]

The National Rural Health Association in the United States has developed a paper, *Rural and Frontier Emergency Medical Services: Agenda for the Future*, that identifies that rural and frontier EMS systems of the future will need to assure a rapid response with basic and advanced levels of care as appropriate to each emergency: they will serve as a formal community resource for prevention, evaluation, care, triage, referral, and advice. They see at its foundation a mix of volunteer and paid professionals at all levels, as appropriate for and as determined by the community.[9] In the United Kingdom, a significant development in response to these demands has been the emergence of the Emergency Care Practitioner (ECP). In these innovations, paramedics have been given additional assessment, treatment and referral skills to deal with a range of minor injuries and falls cases.[2, 3, 5, 10–12]

Any changes to paramedic roles need to be well thought out and care taken to ensure that any expansion of the paramedic role does not compromise emergency response and that appropriate educational programs are in place.[13] If the Rural Expanded Scope of Practice (RESP) model is to be embraced as part of an integrated health care system, its introduction needs to be closely scrutinised to ensure that any changes have positive public health outcomes.[14, 15]

Research aims and design

The research aimed to identify Australian and international trends in the evolving role of paramedics to identify a rural expanded scope of practice for Australian rural and regional paramedics. For the first time in Australia a multi-state approach was taken to ambulance personnel roles and education, where each extended paramedic role provided a distinct case for description and analysis. The in-depth nature of the case study data collection allowed inclusion of relevant inter-professional interactions and important cultural factors. A feature of the project was its concentration on field research that captured the views of practising health professionals and paramedics, and where possible members of local communities.

The respective state ambulance authorities nominated the sites that constituted the case studies on the basis of them being examples of innovation. Three sources of data were used: semi-structured interviews with key informants; observation of key processes and events; and review of documents which describe the paramedic role and the required organisational and educational support. This triangulation guarded against the case study data being unreliable through interviewer bias or inaccuracy.[16]

Each case study explored how the paramedic roles interact with other health professionals, health consumers and ambulance services in relation to the responsiveness, accessibility and continuity of care. The semi-structured interviews included questions about respondents' understanding of and attitude toward an expanded scope of practice role for paramedics, experiences of interactions with the role and expectations of how it could impact on the delivery of health services in rural areas. Potential enhancers and barriers to the extended role were identified as technology, education, organisational factors and legislation. Analysis was undertaken through both deductive and iterative processes as part of regular teleconferences and one face-to-face meeting of the whole research team following completion of data collection and the drafting of case studies.

A limitation was the inability to interview as many medical practitioners and members of the public as hoped. In the latter case, there were particular challenges in one state where the ambulance service had less well developed links with community members through volunteers and auxiliaries. These limitations resulted in a strong reliance on the literature and the specialist knowledge of the principal researchers during the analysis stage.

The case studies

Data from the four sites provided a rich tapestry of information, detailing aspects of health care delivery in diverse areas of four Australian states. In terms of topography and geography the four sites, which included coastal and mountain areas, river flats and forests and broad-acre farming plains, presented a diversity of features. They shared the characteristics of small populations with low population densities and all were relatively remote, being two to three hours by road from larger population centres.

The New South Wales case study was set in the south-west of the state. Coleambally and Barham were selected as typical rural communities in a relatively remote area. The overwhelming characteristic of this case study was the lack of any significant change in the roles and interactions of the paramedics, despite paramedics and other health professionals sharing a keenness to see some innovation that will help the local health system operate more effectively. The findings highlight the need to develop more flexible and integrated services, rather than uncritically continuing with traditional approaches.

The South Australian case study demonstrated the value of generating local solutions to local health workforce problems. This program established a process where rural hospitals can enter into an agreement with the ambulance service to supply an Intensive Care Paramedic for emergency departments when a doctor is unavailable. A significant feature of the program is that the paramedic role changes from the traditional 'scoop and run' or 'shifting the problem' to one that requires more assessment, stabilisation and treatment. It predominately operates in Bordertown located near the Victorian border with limited application at Pinnaroo and two other rural hospitals.

The Tasmanian case study examined the role of the *East Coast Paramedic*, and explored how this role has evolved into an extended scope of practice model. The East Coast Paramedic is located in Scamander and services the north-eastern region of Tasmania. The paramedic works as an autonomous practitioner operating in partnership with local volunteer units, hospitals, general practitioners and the community. It requires strong teamwork, clear communication and understanding between the paramedics, volunteers and other health professionals. In this case, the paramedics had the flexibility to extend their roles and adapt to the communities in which they practise.

The Victorian project was developed because the traditional volunteer service delivery model was not fully meeting the needs of the Omeo and Mallacoota communities. A non-traditional model of service delivery model was developed with local communities and other interested parties.[17] As the emergency workload was too low to support a full time paramedic presence the concept of the *Paramedic Community Support Coordinator* was introduced. This model was designed to integrate a paramedic with an expanded scope of practice into the community and to support volunteer ambulance staff. The role provides public health and pre-hospital care education to the community and other health care providers, and assists with the recruitment, training and retainment of volunteer ambulance staff.

A rural model of practice

> It is a combined role and you also extend that further to outside of the branch and there is more community involvement and more involvement with other health organisations and emergency organisations up here as well. So it seems it is quite a broad range of tasks as opposed to being somebody who is on the road all the time.

From a rural perspective, communities expect adequately resourced ambulance services that are able to respond quickly to their needs with well-trained staff who behave in a professional manner.[18] Ambulance services have responded to these needs and expectations of smaller communities in a variety of ways, ranging from providing voluntary systems to the appointment of full-time staff at sometimes advanced clinical levels. However, both these models of service delivery have problems related to sustainability and the maintenance of standards.

The suggested rural expanded scope of practice model is built around three domains of practice:

- emergency response through primary response to incidents or in support of volunteer services
- clinical care given in the out-of-hospital or institutional settings
- community engagement.

The communities in the case studies shared common environmental issues. These included their small size and isolation from major health services, their difficulty in recruiting and retaining health professionals, low caseloads and associated risks of de-skilling, and a reliance on volunteers and/or sole paramedics in emergency services. Many of the interviewees in the case studies raised the possibility of extending or acknowledging an extended scope of practice for paramedics, while others were concerned about the difficulty of maintaining existing skills in low workload areas.

> There is a potential for loss of these skills in areas of low workloads. Confidence and performance may drop simply due to a low caseload even if skills level does not. Giving extra skills may not be a solution to this.

The proposed rural expanded scope of practice model combines the strengths of both the community-volunteer and practitioner models.[19, 20] Melding these two existing models into a new, practical and acceptable model will be useful in diverse rural settings outside major regional centres where greater use can be made of mixed staffing configurations. This would see community volunteers or first responders working in integrated teams with expanded scope paramedics.

Our proposed model is called the **Rural Expanded Scope of Practice (RESP)** and its practitioners will undertake the following activities as the core components of their new role.

- Rural community engagement
- Emergency response
- Scope of practice extension
- Primary health care

Rural community engagement encompasses extended paramedic roles in health and emergency service planning and development, and a more active role in primary health care such as health education and screening. This enrichment of the role will see a significant increase in the professional profile of paramedics in the community. In the case studies, we witnessed and were told of the high esteem in which the paramedics were already held in the community.

> The personality and the way in which the person works is as important to me as that high level of clinical skills that they have because I am really so happy that we have got a fellow like [name deleted] appointed to [town X]. If it was someone who had a high level of clinical skills but wasn't such a good communicator, the position I don't think would be as effective.

Emergency response includes the traditional role of responding to incidents or in support of volunteer and first responder services. The main challenge that this new model faces is convincing paramedics and others to extend the role beyond this core activity.

> People don't quite understand the roles that our bureaucracies give us particularly well, in that they don't understand that Ambulance Officers or the Ambulance Service is primarily concerned with the provision of emergency care.

Scope of practice extension can take place in either out-of-hospital or institutional settings. Central to this extension of practice scope is the ability to competently assess, treat and release patients when appropriate or transport patients to hospitals. More use may be made of paramedic knowledge and skills in medical clinics and hospitals. These 'adjunct' roles in hospitals and medical facilities may include assistance with airway management, the taking of blood pressures and pathology samples, assisting with the management of 'difficult' patients, and the stabilisation of patients. There may also be scope for these minor injury roles to be extended beyond basic first aid in occupational settings such as mines and factories, and in extreme field situations, such bush fires, wars and major disasters.[9]

Primary health care integration would see paramedics taking an active role with other health professionals in the treatment of minor injuries and in the provision of primary health care. Potential activities that could be undertaken during 'down time' could include activities such as health education and screening.

> Compared to nursing or hospital [situations] the paramedic gets more of an insight into the patient's overall condition, medical as well as social. The paramedic can see more of the requirements for other resources as many patients are elderly, live alone, have lost a partner, have many different social aspects that may not be witnessed in hospital or by other medical staff.

In addition to their 'life saving' role, paramedics can have a positive role in promoting healthy lifestyles and preventing death and injury through public education programs. These features are based on the view that pre-hospital care as an integral part of the local community and is integrated into the health care system, with professional staff sharing roles that best utilise their skills and knowledge.

The extent to which paramedics are able to become engaged in primary health care activities depends on their education and training, their legal status, and their availability after fulfilling their primary functions in emergency medical care and transportation. Local paramedics would need to tailor their initiatives according to local epidemiological defined realities as rural areas are very different from one another.[21]

Strengths and challenges of the RESP model

The RESP model has historical links to ambulance tradition and practice throughout Australia where volunteers formed the genesis of most civilian ambulance systems. More recently paramedics have formed strong bonds with the established health professions and are seen as an emerging health profession. The challenge is to implement a model that marries the strengths of the community-volunteer model to the emerging professionalism of paramedics.

The RESP model is well suited to rural areas with high ambulance 'down-time' and a dearth of public health workers. In New South Wales for instance, it has been recognised for some time that the role of paramedics in small rural towns needs to be redefined if small rural communities are to make the most of their limited resources. [22] Paramedics also feel a need to use their time and skills effectively.

> ... it's less harmonious in a way when you get three people on duty sitting around here all day in this little office and we haven't had a job now, we had one job in four days. Now that's frustrating. You get a job comes in during the day and there's three on, obviously everyone wants to go. Well you just can't do that.

The essential difference between the RESP model and the widespread urban orientated models used in some parts of rural Australia is its extension beyond the well accepted chain of survival's four links at the site of the emergency event—early recognition and call for help, early CPR, early defibrillation, early advanced cardiac life support.[23–25] Expanding the depth of treatment and clinical decision-making, and the inclusion of primary health care and public health activities both before and after the chain of survival is an extension to ambulance practice.

A significant strength of the RESP model is that it draws social and political support from members of the public, volunteers and health care professionals who work with and alongside paramedics. This feature may make the RESP model more resilient and less prone to 'capture' by any single stakeholder group such as local hospitals and ambulance unions. Its key features are its capacity to integrate the existing professional and community-volunteer ambulance models with public health and social service agencies, primary care providers and other health care facilities to ensure that patients are referred to or transported to the most appropriate and cost-effective facility. This ensures that pre-hospital care occurs as part of a seamless system that provides patients with well-organised and high quality care.

Discussion

The roles of health professionals and health service organisations continue to evolve. Increasing knowledge and skills, together with legal requirements of practice, have led to an understanding that health professionals should only undertake those activities for which they are recognised as competent. Similarly, the role of health care services is evolving with hospital care no longer confined to the physical location of the service. At the same time communities are expressing their needs for local health services, with such requests usually reflecting increased expectations. However, despite a range of government initiatives, rural areas do not have equivalent levels of health care to metropolitan areas and there is a continuing concern about the sustainability of nursing and medical practitioner workforces in smaller rural areas.

Into this ever-changing environment has now been introduced the extended scope paramedic, who brings the skills of a competent paramedic with advanced skills in emergency management. Many respondents in this study recognised that paramedics' previous work experience provides them with knowledge and experience that allows them to undertake broader roles than has previously been the case. Paramedics are increasingly becoming first line primary health care providers in many small rural communities as other health care services contract. Within these emerging expanded scopes of practice models, paramedics are developing professional responsibilities throughout the cycle of care, through:

- more active community involvement and support
- expansion of their capacity to work in partnership with other health providers in institutional settings or as part of the primary health care system
- the development of broader scopes of practice for paramedics in response to changes in technology, education and the ongoing shortage of other health professionals.

Our findings have shown that paramedics can contribute to an improvement in health care service provision and further expansion of the paramedic role may be possible. However, the feasibility and desirability of this is yet to be proven. Apart from advanced life support knowledge and skill the RESP paramedics appointed to small rural communities will need a broad range of knowledge and skills that will enable them to make a positive contribution to patient care and community health. Of particular relevance are well developed interpersonal skills and the ability to build relationships with local and regional stakeholders.

Greater integration of paramedics with rural communities and the health system will also require ambulance authorities and the profession itself take an active role in the process of building partnerships and forming alliances. The collaborative aspect of this project that facilitated ambulance authorities to share experiences and innovations has been an important Australian hallmark. Using this

process as the basis for future collaborations could result in Australian ambulance services becoming more cohesive and more prepared to share their knowledge base and avoid 'reinventing the wheel'.

As a result of our research, analysis and reflection we recommend that the following rural health issues be progressively addressed. Firstly, within the policy environment, sufficient resources need to be made available to enable ambulance services to meet the needs and expectations of rural communities on an equitable basis. Ambulance services also need to evolve in a way that will accommodate more independent paramedics who are integrated into the health system and their local communities.

Secondly, the RESP model needs to be broadly supported as an integral part of mainstream ambulance services through formally defined position descriptions and other forms of recognition. In order to introduce the innovation in a collaborative manner, efforts should also be made to build a strong network of multi-disciplinary practitioners who will support the model in rural Australia.

Thirdly, in terms of community engagement, the introduction of the RESP Model needs to be based on the values, priorities and capacity of the communities they serve. For the model to provide extended benefits to communities and volunteers, ambulance services should clearly define community interaction goals and ensure paramedics have the appropriate leadership and networking skills as it is clear from previous studies that poor skills in these areas can create conflict and retention difficulties.[26, 27]

Fourthly, while the RESP model has the potential to improve the health workforce situation and contribute to improved health and safety in rural and remote areas, to be effective and sustainable it must be underpinned by a robust education system. It is apparent that the role of the RESP paramedics needs an undergraduate education that provides them with the knowledge, understanding, skill and professional attitudes that will enable them to operate as independent practitioners. The current transfer of paramedic education from state ambulance authorities to universities has the potential to meet this need in coming years.

The description and analysis of this innovative model of ambulance service delivery has set strategic directions for an expanded scope of practice paramedic role for rural and regional Australia. The RESP model has the capacity to facilitate a higher quality and more equitable ambulance service for rural and regional communities. This has occurred in several of the case studies through an increased use of the capacities of the ambulance system, and through an increase in the clinical capabilities of paramedics and volunteer staff. The support and involvement of other health care professionals and members of the community was an essential features of the successful innovations described here.

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